

**B. Fabrication**

General Provisions 101 through 150.

**C. Acceptance**

The Department will accept the material based either on the certification or on the results of tests conducted by the Department.

**D. Materials Warranty**

General Provisions 101 through 150.

**850.2.08 Aluminum Alloy Pipe****A. Requirements**

Use aluminum alloy pipe that meets the requirements of ASTM B 241/B 241M, Alloy 6061, Temper T 6, unless otherwise specified.

**B. Fabrication**

General Provisions 101 through 150.

**C. Acceptance**

The Department will accept the material based either on the certification or on the results of tests conducted by the Department.

**D. Materials Warranty**

General Provisions 101 through 150.

## **Section 851—Structural Steel**

**851.1 General Description**

This section includes the requirements for the grade and toughness of structural steel.

**851.1.01 Related References****A. Standard Specifications**

Section 106—Control of Materials

**B. Referenced Documents**

ASTM A 673/A 673M

ASTM A 709 (ASTM A 709M)

ASTM E 23

**851.2 Materials****851.2.01 Structural Steel****A. Requirements**

## 1. Type

Use the structural steel grade specified in the Plans. Ensure the steel meets all requirements of the governing ASTM or AASHTO specification, this Specification, and Plan requirements.

Ensure that all steel submitted as main load-carrying member components subject to tensile stress meets either S83 or S84 of ASTM A 709 (ASTM A 709M).

## 2. Certification

Certify that the steel meets the requirements according to Subsection 106.05, “Materials Certification.”

**B. Fabrication**

General Provisions 101 through 150.

**C. Acceptance**

## 1. Toughness Tests

Charpy V-Notch tests are mandatory for materials designated on the Plans as main load-carrying member components subject to tensile stress.

- a. Sample the steel according to ASTM A 673/A 673M.
- b. Perform the Charpy V-Notch test according to ASTM E 23.

**D. Materials Warranty**

General Provisions 101 through 150.

## **Section 852—Miscellaneous Steel Materials**

**852.1 General Description**

This section includes the requirements for miscellaneous materials, such as:

- Steel bolts, nuts, and washers
- Anchor bolts, nuts, and washers
- High tensile strength bolts, nuts, and washers
- Corrugated steel plank for bridges
- Steel grid for bridge floors

**852.1.01 Related References****A. Standard Specifications**

Section 106—Control of Materials

**B. Referenced Documents**

<b>ASTM</b>		
A 123/A 123M	A 570/A 570M	E 376
A 153M/A 153M	A 653/A 653M	F 436
A 325/A 325M	A 709/A 709M	F 568M
A 490/A 490M	A 924/A 924M	F 606 (F 606M)
A 563/A 563M	B 695	F 844
		Recommended Practice E376

ANSI B 1.1M

AASHTO M 314

**852.2 Materials****852.2.01 Steel Bolts, Nuts, and Washers****A. Requirements**

## 1. Bolts and Nuts

- a. Use bolts and nuts, hex or heavy hex as required, that meet the applicable requirements of ASTM F 568M.
- b. Ensure all threads meet the requirements of the latest issue of ANSI B 1.1(B 1.1M).
- c. Use bolts that have Class 2A (6H) threads.
- d. Use nuts that have Class 2 B (6G) threads.
- e. Ensure bolts that transmit shear are threaded so that no more than one thread will be within the grip of the metal.
- f. Use bolts long enough to extend entirely through the nut but no more than 1/4 in (6 mm) beyond them.